

fern of northeastern and central Mexico which has hitherto passed as *Cheilanthes gracillima* Eaton. From that species of the western United States it differs, Mr. Maxon finds, in its greater size, in having hairs instead of scales on the upper surface of the frond and in the characters of its scaly covering.

Prof. Vaughan MacCaughey⁴ has published an ecological survey of Hawaiian pteridophytes. The most striking feature of the Hawaiian fern flora is the extraordinarily high proportion of species which are found nowhere except in these islands—123 out of 190.⁵ This is due to the long isolation of the Hawaiian archipelago. The endemic species are very irregularly distributed among the different islands. Kauai has the most; Oahu is next; Hawaii, though much the largest in area, has the fewest. This, Prof. MacCaughey points out, furnishes striking corroboration of the generally accepted belief that the western islands are older and have been longer isolated than the eastern. It is just in the regions supposed to be geologically the oldest that the richest fern-flora is found.

Prof. MacCaughey divides the ferns into two series of groups, one based on their distribution in point of altitude, the other on their preference for wet, medium, or dry habitats. He closes with an annotated list of all the species known to occur on the islands.

SOME CURIOUSLY CUT SPECIMENS OF *DRYOPTERIS BOOTTII*—In August last while searching for *Dryopteris* hybrids in Washington, Mass., my son found a very

⁴ MacCaughey, Vaughan. An ecological survey of the Hawaiian pteridophytes. *Journal of Ecology* 6: 199-219. Nov. 30, 1918.

⁵ The type-setter, not Prof. MacCaughey, is doubtless responsible for the statement in the text that 195 out of 190 species are endemic—a remarkable percentage indeed!

curiously cut variety. It was apparently badly eaten by bugs, but upon examination we found that the subdivisions of the pinnules were untouched. Their outlines were without any sign of such attack. The serrations and indentations and the teeth were normal, not irregular as would have been the case if they had been eaten by bugs. We thought we had found a new hybrid. Later, specimens were identified as "Bug eaten specimens of *D. Boottii*."

Meanwhile we had gone back to the place in the swamp where the specimen had been found and found the plant. Looking about we saw that there were several similarly marked plants of the same variety, so we dug up a root. Quite accidentally, so far as the result was concerned, I sliced the rootstock. In the middle of it I found a longitudinal channel, evidently bored by some bug. Not only so, we quickly found the bug itself. It was a white grub perhaps an inch and a quarter long. Its head was a lightish brown, and covered with what seemed like a hard shell. Along the sides ran a row of black hairs in tufts.

Upon finding this we proceeded to dig up other specimens, five in all. All were marked alike, all evidently *D. Boottii* or some form of it and in every case we found not only the channeled rootstock but the grub within that had done the deed. Crossing the road into another piece of swamp perhaps three hundred feet away we found the same condition in one or two ferns that we picked there.

Later in the month we found a similarly cut fern of the same variety in a piece of swamp a mile away. This specimen while showing the outward signs of injury to the rootstock did not seem to have been eaten in the same way. Nor did we find the grub. It was the only exception, however, to the presence of this borer grub, among those which we examined.—C. S. LEWIS, *Burlington, N. J.*